FIG. 1

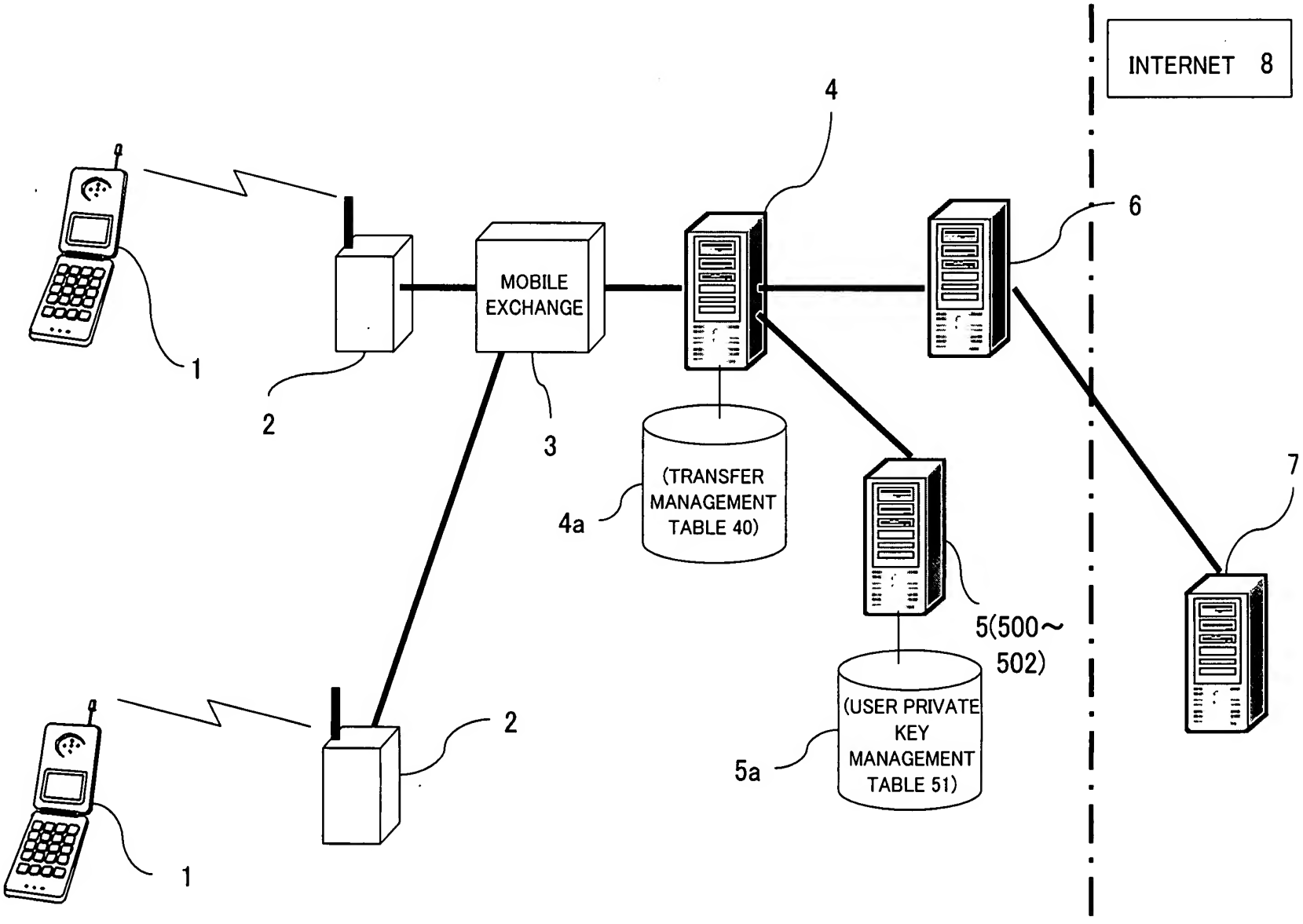
INTERNET 8
4
6
MOBILE EXCHANGE
1
2
3
(TRANSFER MANAGEMENT TABLE 40)
4a
7
5(500~502)
(USER PRIVATE KEY MANAGEMENT TABLE 51)
5a
2
1

FIG. 2

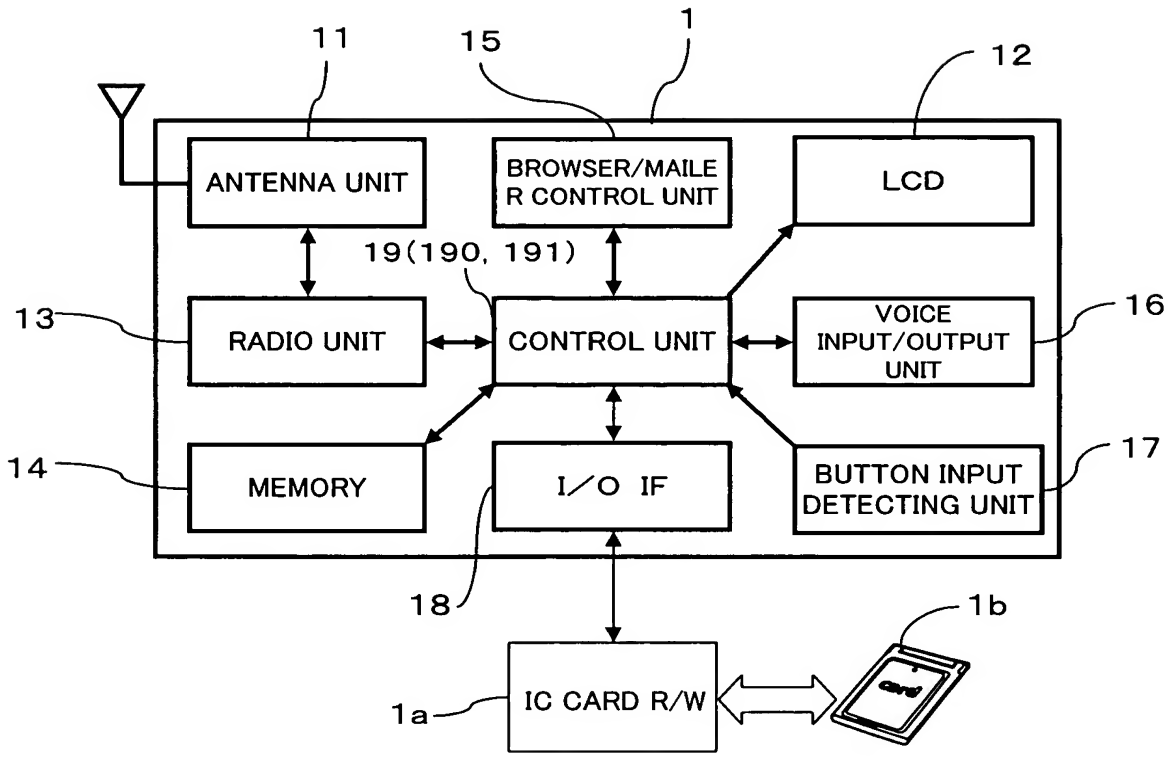
11
15
1
12
ANTENNA UNIT
BROWSER/MAILER CONTROL UNIT
LCD
19(190, 191)
13
RADIO UNIT
CONTROL UNIT
VOICE INPUT/OUTPUT UNIT
16
14
MEMORY
I/O IF
BUTTON INPUT DETECTING UNIT
17
18
1b
1a
IC CARD R/W

FIG. 3

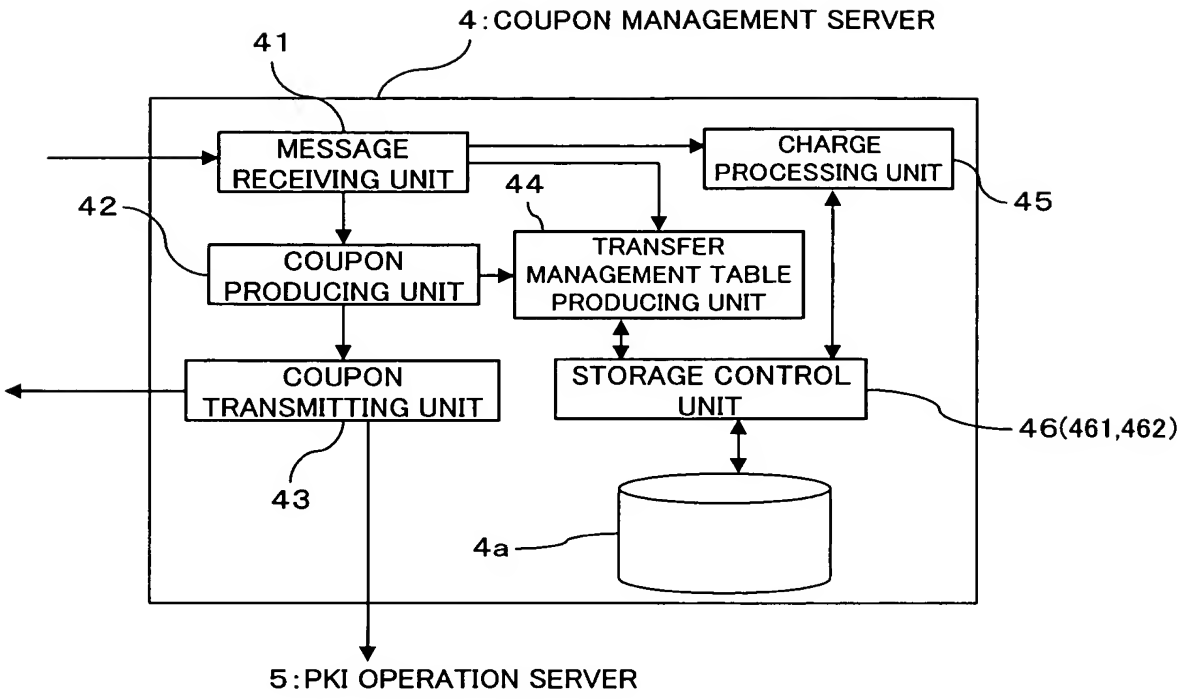
4:COUPON MANAGEMENT SERVER
41
MESSAGE RECEIVING UNIT
CHARGE PROCESSING UNIT
45
42
44
COUPON PRODUCING UNIT
TRANSFER MANAGEMENT TABLE PRODUCING UNIT
COUPON TRANSMITTING UNIT
STORAGE CONTROL UNIT
46(461,462)
43
4a
5:PKI OPERATION SERVER

FIG. 4

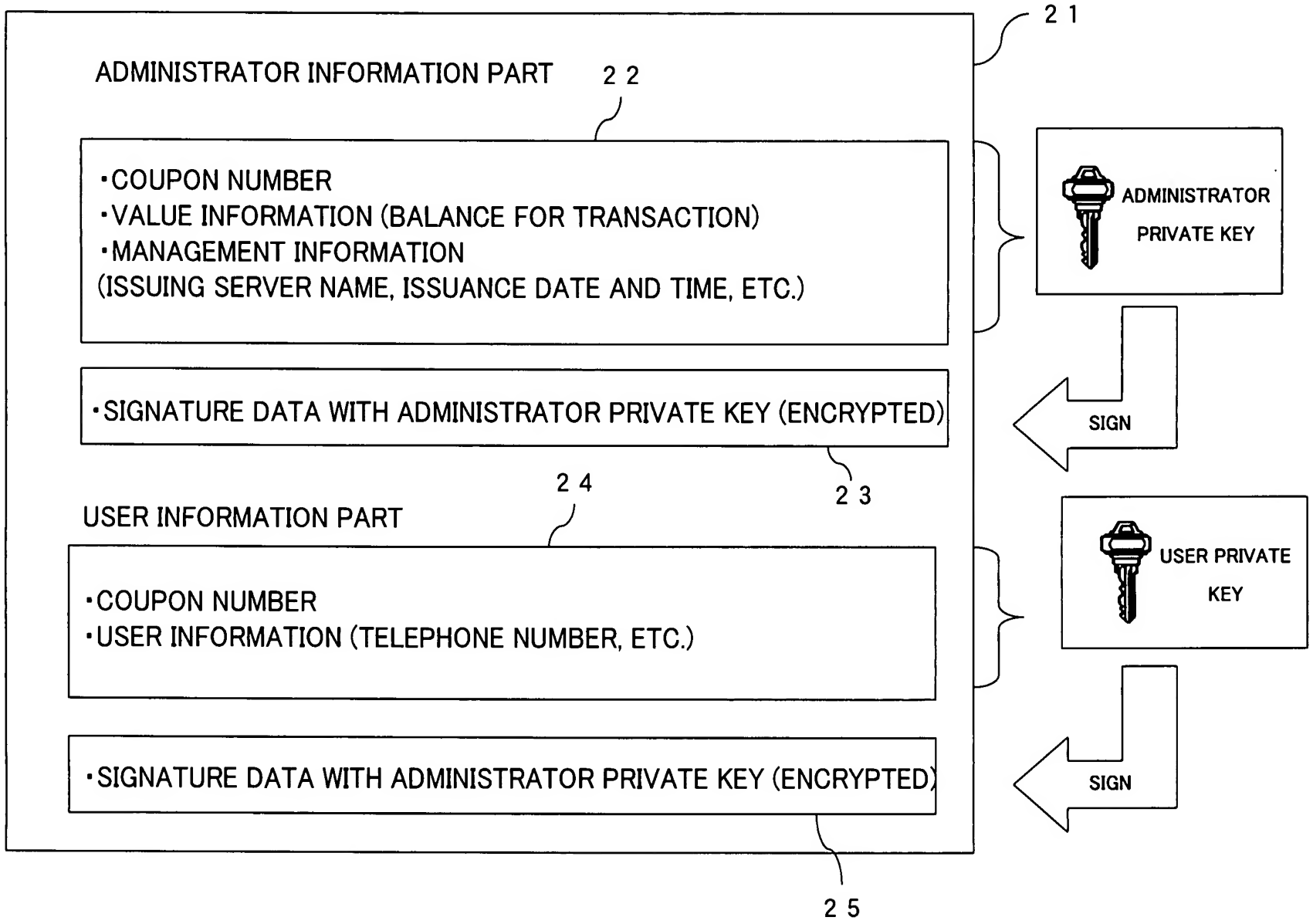
21
ADMINISTRATOR INFORMATION PART
22
・COUPON NUMBER
・VALUE INFORMATION (BALANCE FOR TRANSACTION)
・MANAGEMENT INFORMATION
(ISSUING SERVER NAME, ISSUANCE DATE AND TIME, ETC.)
ADMINISTRATOR PRIVATE KEY
SIGN
・SIGNATURE DATA WITH ADMINISTRATOR PRIVATE KEY (ENCRYPTED)
23
24
USER INFORMATION PART
・COUPON NUMBER
・USER INFORMATION (TELEPHONE NUMBER, ETC.)
USER PRIVATE KEY
SIGN
・SIGNATURE DATA WITH ADMINISTRATOR PRIVATE KEY (ENCRYPTED)
25

FIG. 5

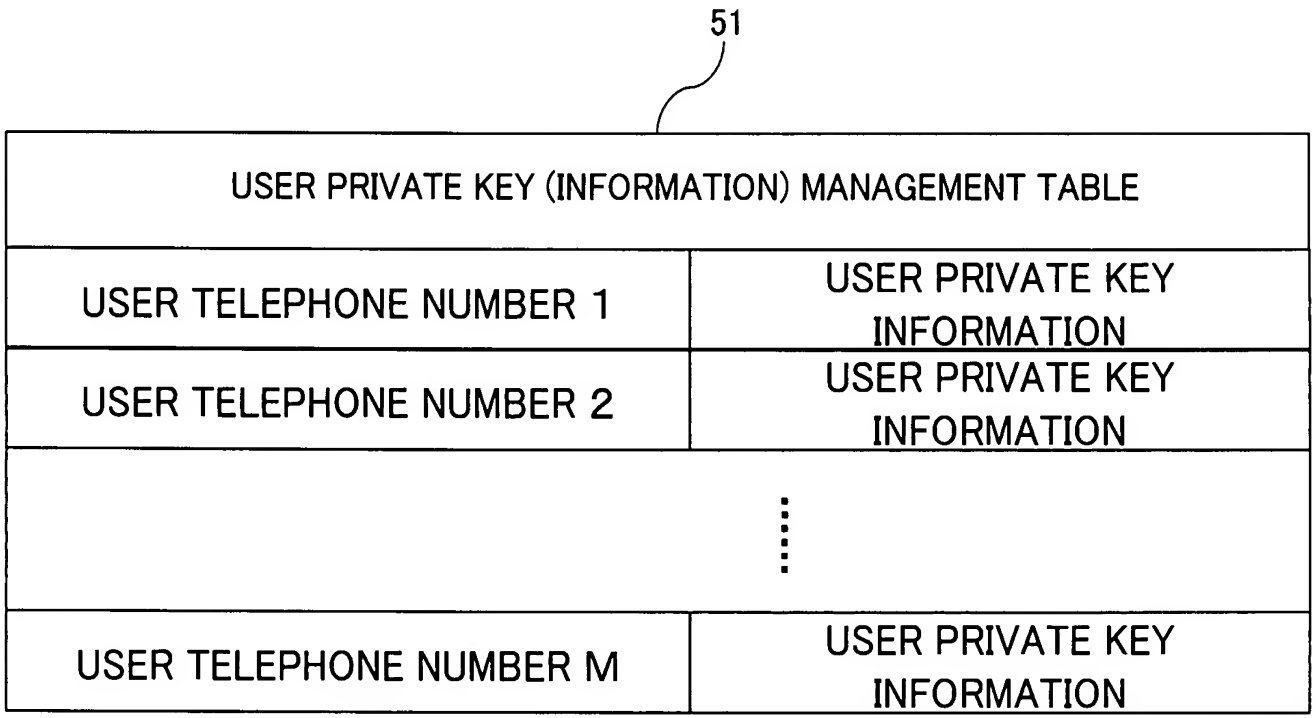
51
USER PRIVATE KEY (INFORMATION) MANAGEMENT TABLE
USER TELEPHONE NUMBER 1
USER PRIVATE KEY INFORMATION
USER TELEPHONE NUMBER 2
USER PRIVATE KEY INFORMATION
USER TELEPHONE NUMBER M
USER PRIVATE KEY INFORMATION

FIG. 6

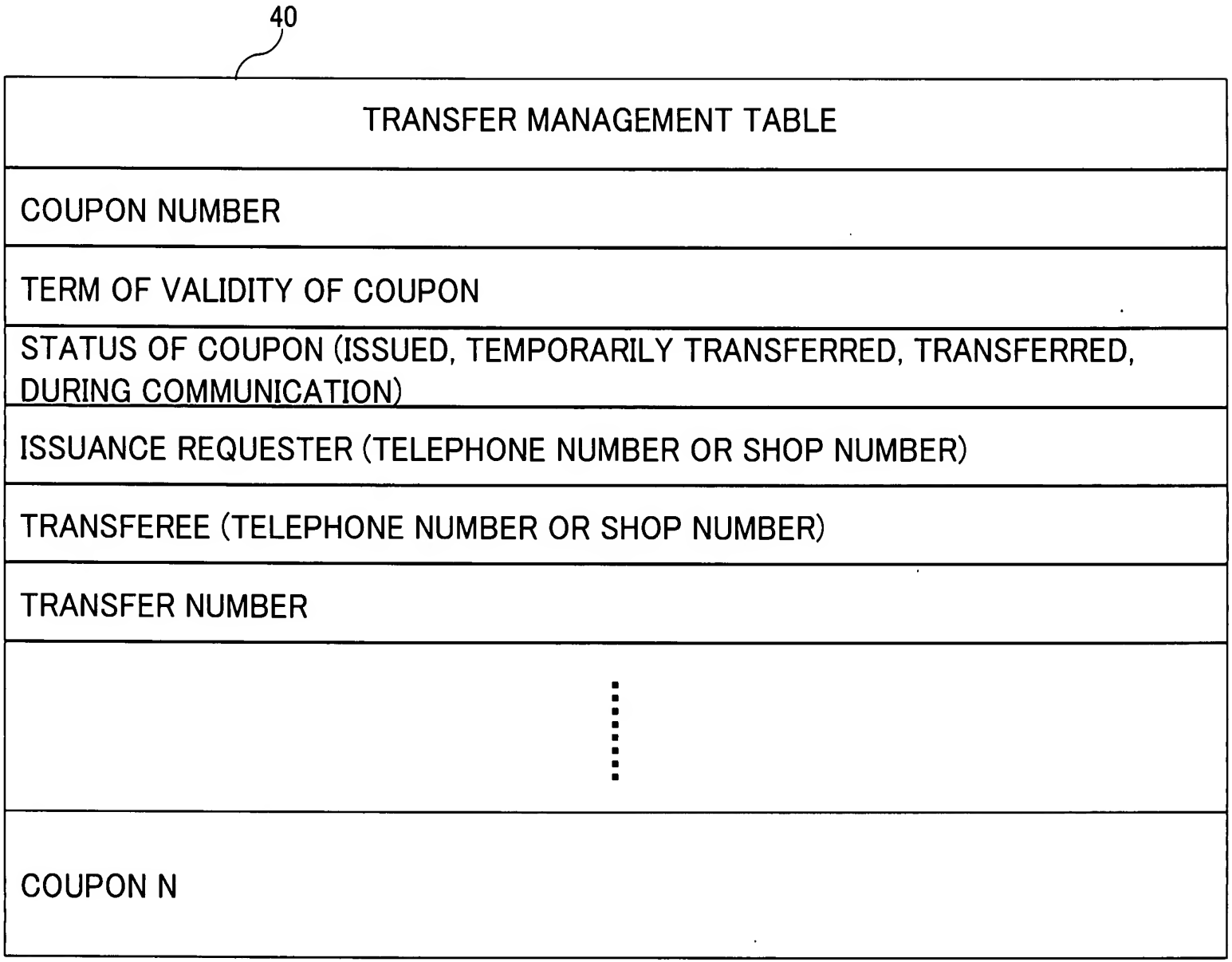
40
TRANSFER MANAGEMENT TABLE
COUPON NUMBER
TERM OF VALIDITY OF COUPON
STATUS OF COUPON (ISSUED, TEMPORARILY TRANSFERRED, TRANSFERRED, DURING COMMUNICATION)
ISSUANCE REQUESTER (TELEPHONE NUMBER OR SHOP NUMBER)
TRANSFEREE (TELEPHONE NUMBER OR SHOP NUMBER)
TRANSFER NUMBER
COUPON N

FIG. 7

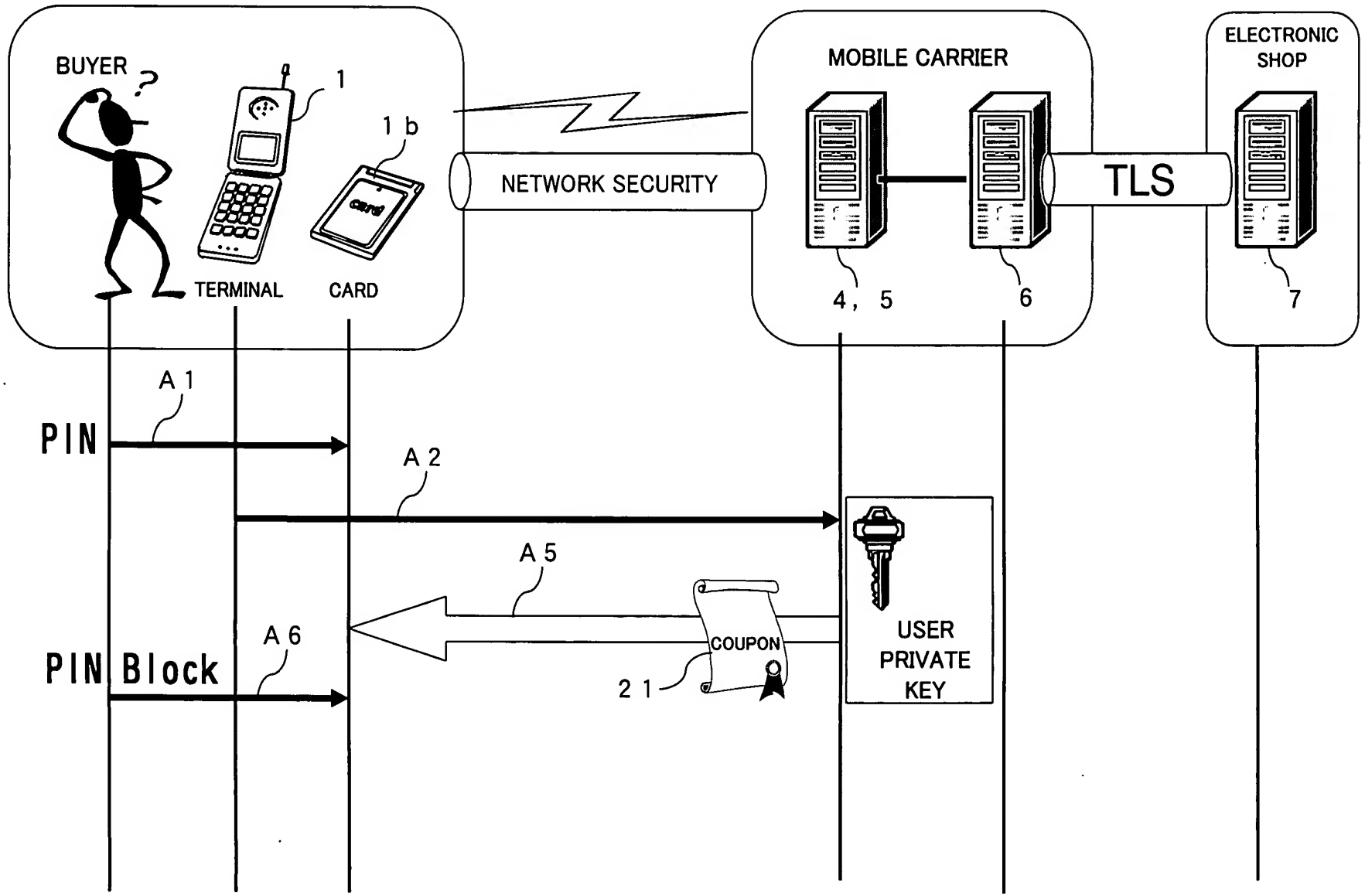
BUYER
1
1 b
TERMINAL
CARD
NETWORK SECURITY
MOBILE CARRIER
4, 5
6
TLS
ELECTRONIC SHOP
7
A 1
PIN
A 2
A 5
A 6
PIN Block
COUPON
2 1
USER PRIVATE KEY

FIG. 8

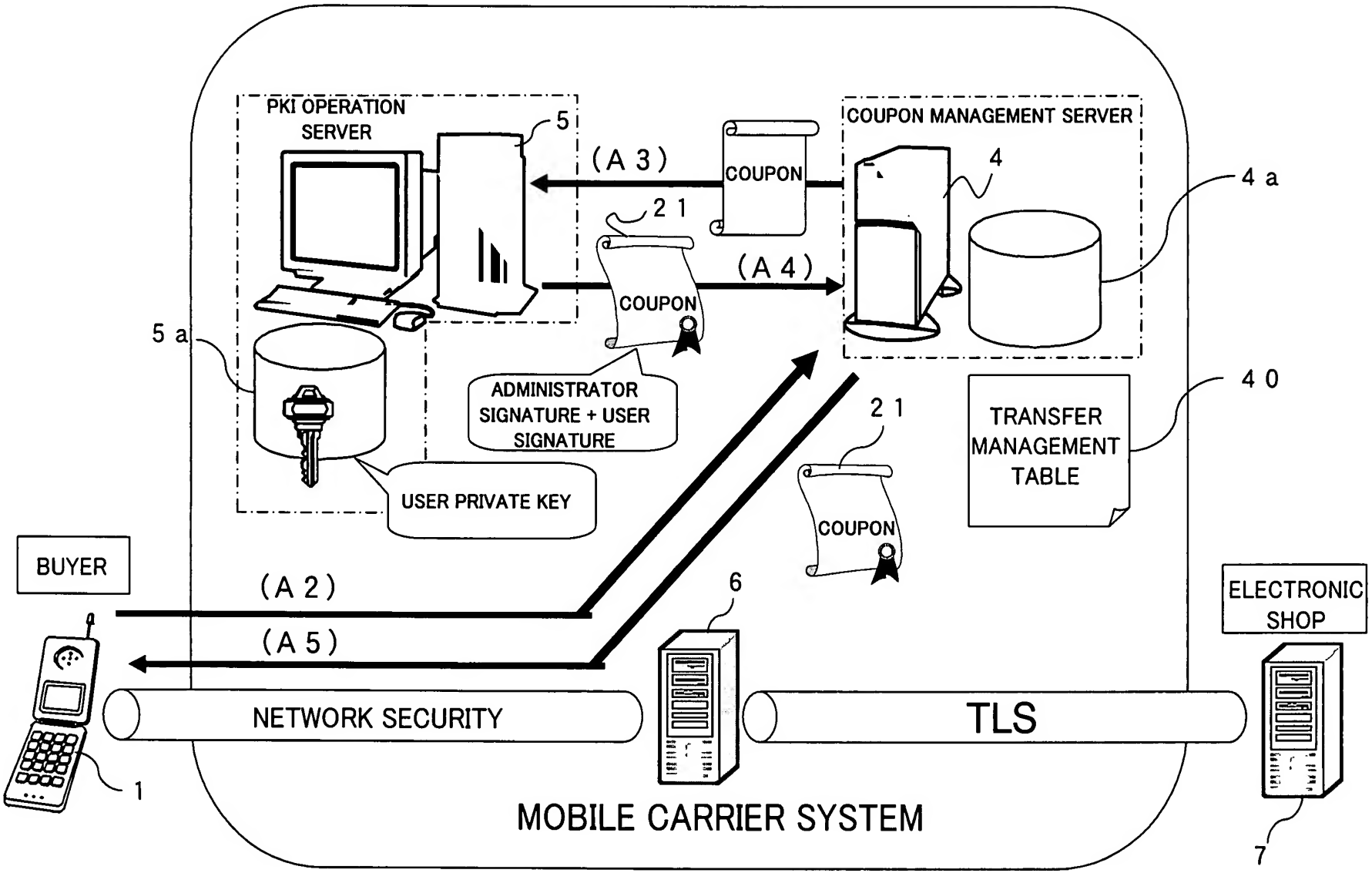
PKI OPERATION SERVER
5
(A 3)
COUPON
COUPON MANAGEMENT SERVER
4
4 a
2 1
(A 4)
COUPON
5 a
ADMINISTRATOR SIGNATURE + USER SIGNATURE
USER PRIVATE KEY
2 1
COUPON
TRANSFER MANAGEMENT TABLE
4 0
BUYER
(A 2)
(A 5)
6
ELECTRONIC SHOP
NETWORK SECURITY
TLS
1
MOBILE CARRIER SYSTEM
7

FIG. 9

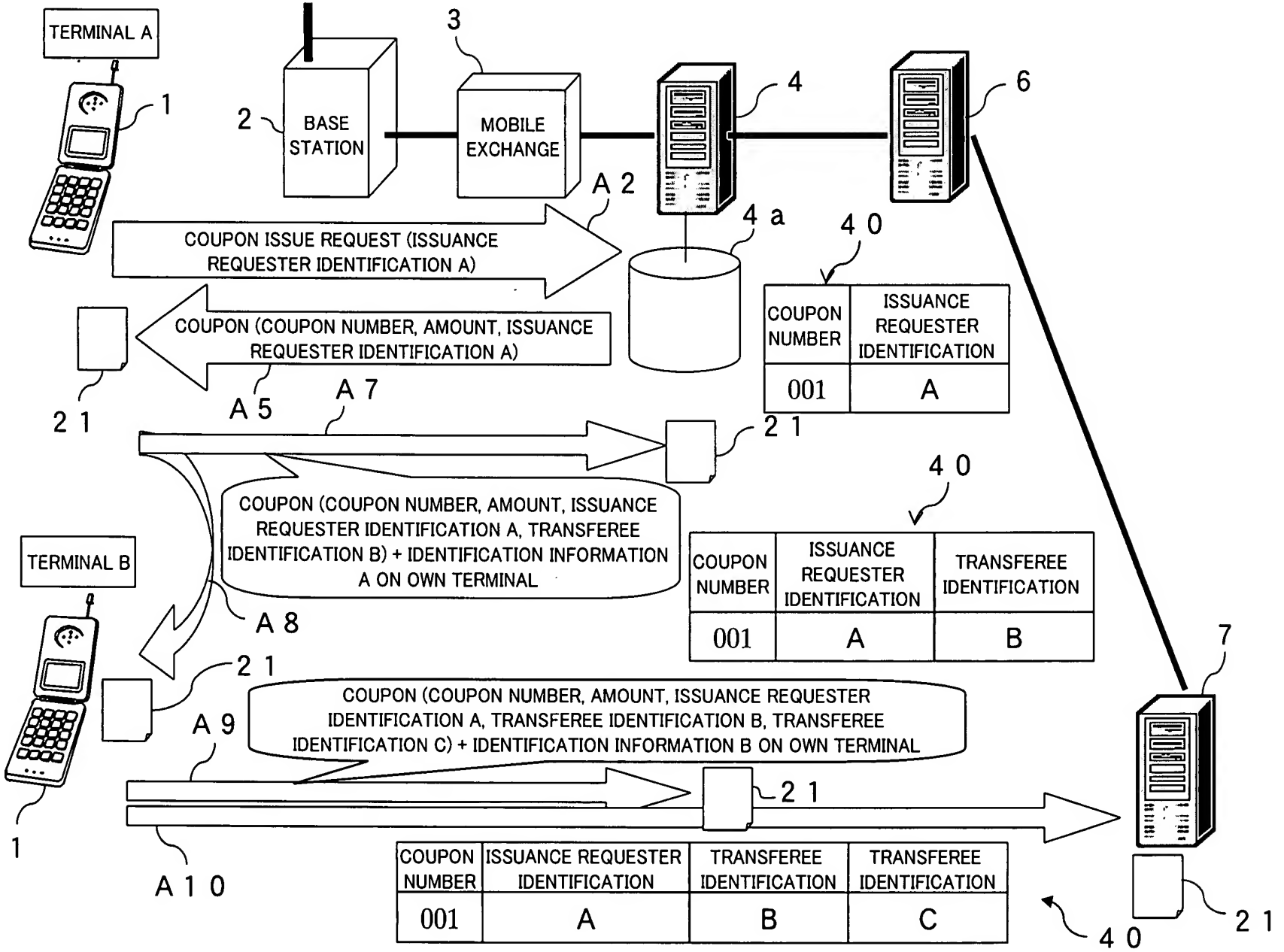
TERMINAL A
1
2
BASE STATION
3
MOBILE EXCHANGE
4
6
A 2
4 a
4 0
COUPON ISSUE REQUEST (ISSUANCE REQUESTER IDENTIFICATION A)
COUPON (COUPON NUMBER, AMOUNT, ISSUANCE REQUESTER IDENTIFICATION A)
COUPON NUMBER
ISSUANCE REQUESTER IDENTIFICATION
001
A
2 1
A 5
A 7
2 1
4 0
COUPON (COUPON NUMBER, AMOUNT, ISSUANCE REQUESTER IDENTIFICATION A, TRANSFEREE IDENTIFICATION B) + IDENTIFICATION INFORMATION A ON OWN TERMINAL
TERMINAL B
COUPON NUMBER
ISSUANCE REQUESTER IDENTIFICATION
TRANSFEREE IDENTIFICATION
001
A
B
A 8
7
2 1
A 9
COUPON (COUPON NUMBER, AMOUNT, ISSUANCE REQUESTER IDENTIFICATION A, TRANSFEREE IDENTIFICATION B, TRANSFEREE IDENTIFICATION C) + IDENTIFICATION INFORMATION B ON OWN TERMINAL
2 1
1
A 1 0
COUPON NUMBER
ISSUANCE REQUESTER IDENTIFICATION
TRANSFEREE IDENTIFICATION
TRANSFEREE IDENTIFICATION
001
A
B
C
4 0
2 1

FIG. 10

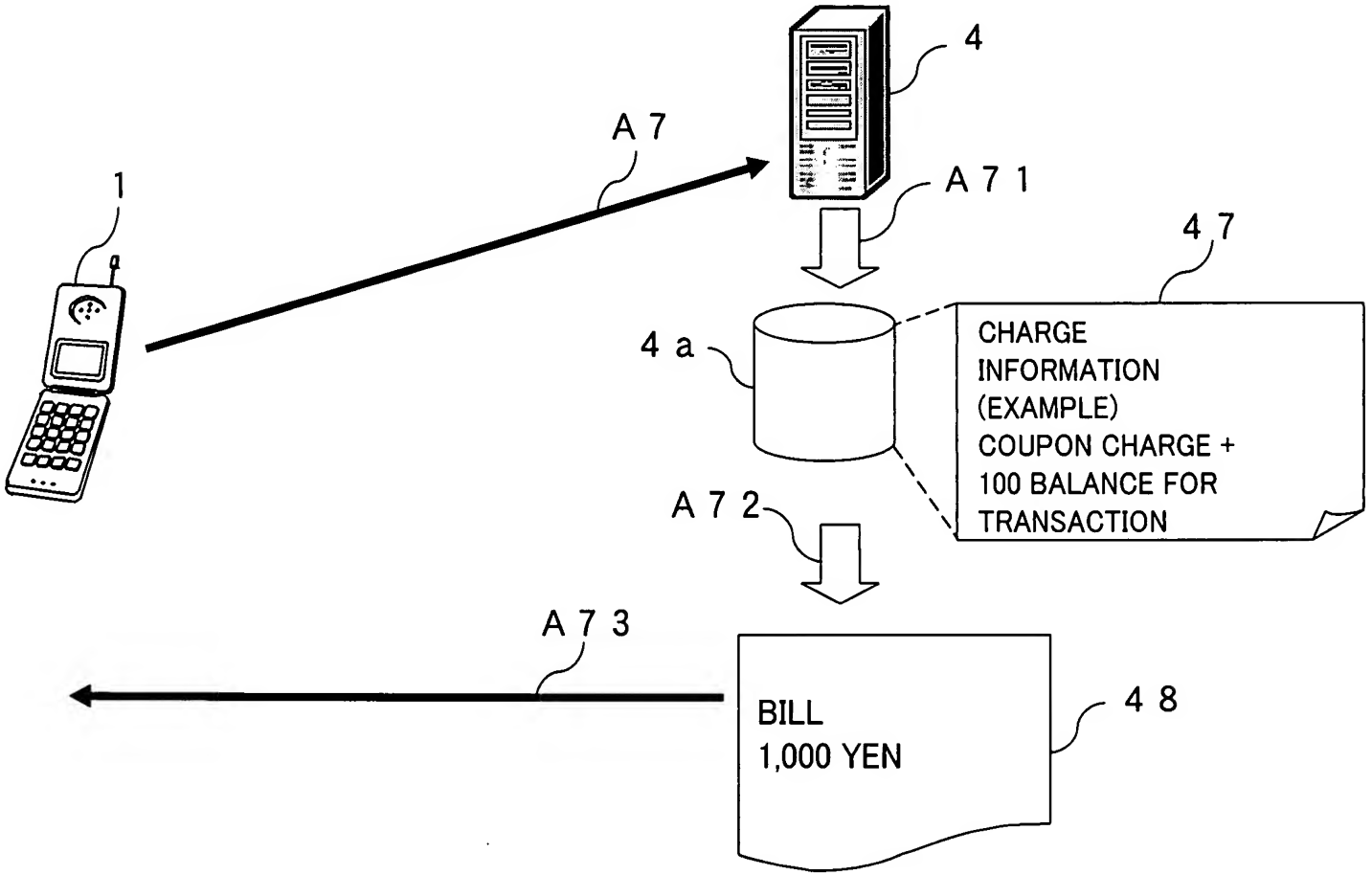
4
A 7
A 7 1
1
4 7
4 a
CHARGE
INFORMATION
(EXAMPLE)
COUPON CHARGE +
100 BALANCE FOR
TRANSACTION
A 7 2
A 7 3
BILL
1,000 YEN
4 8

FIG. 11

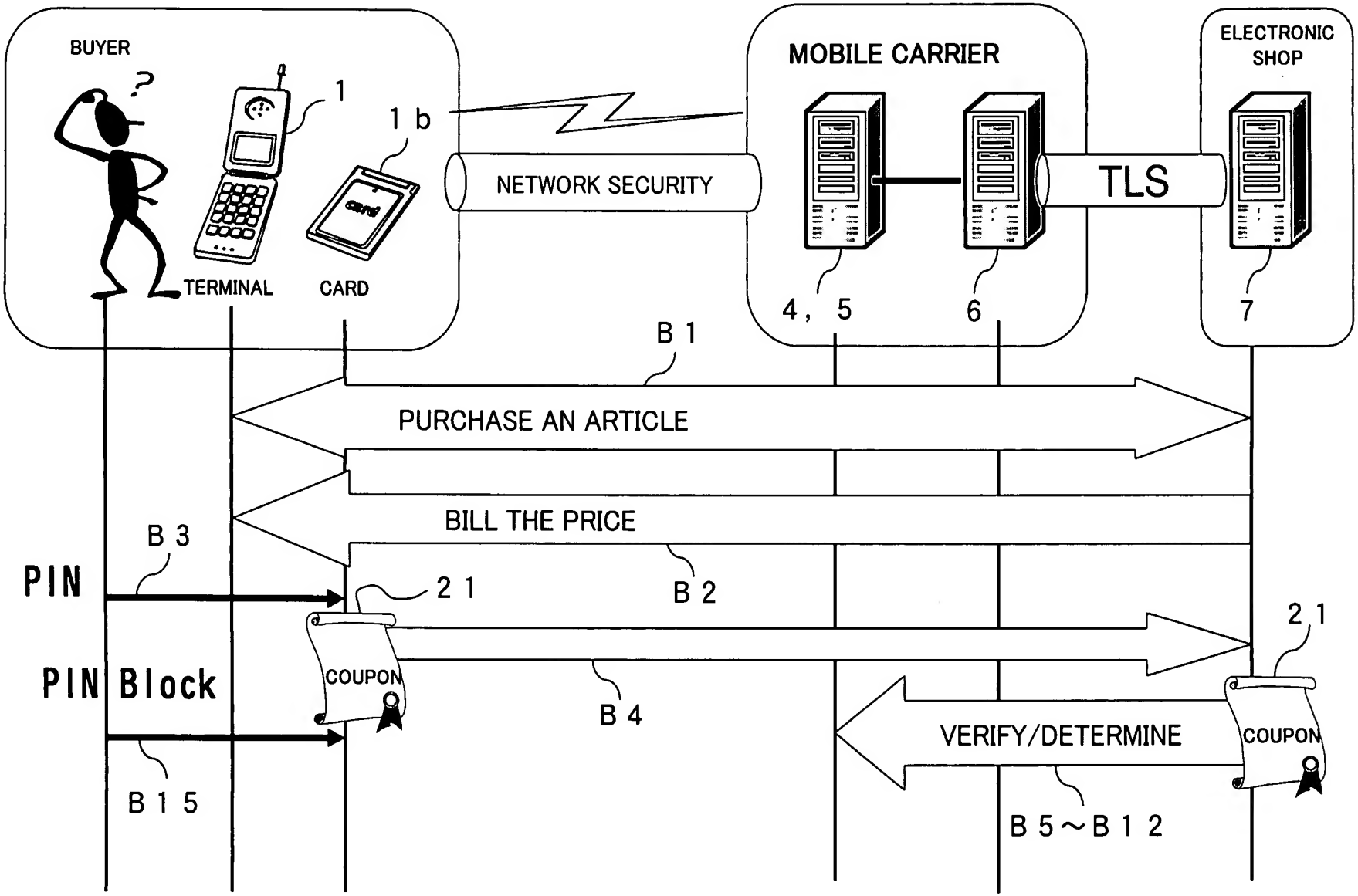
BUYER
TERMINAL
CARD
1
1 b
NETWORK SECURITY
MOBILE CARRIER
4, 5
6
TLS
ELECTRONIC SHOP
7
B 1
PURCHASE AN ARTICLE
BILL THE PRICE
B 2
B 3
PIN
PIN Block
2 1
COUPON
B 4
VERIFY/DETERMINE
B 5～B 1 2
B 1 5

FIG. 12

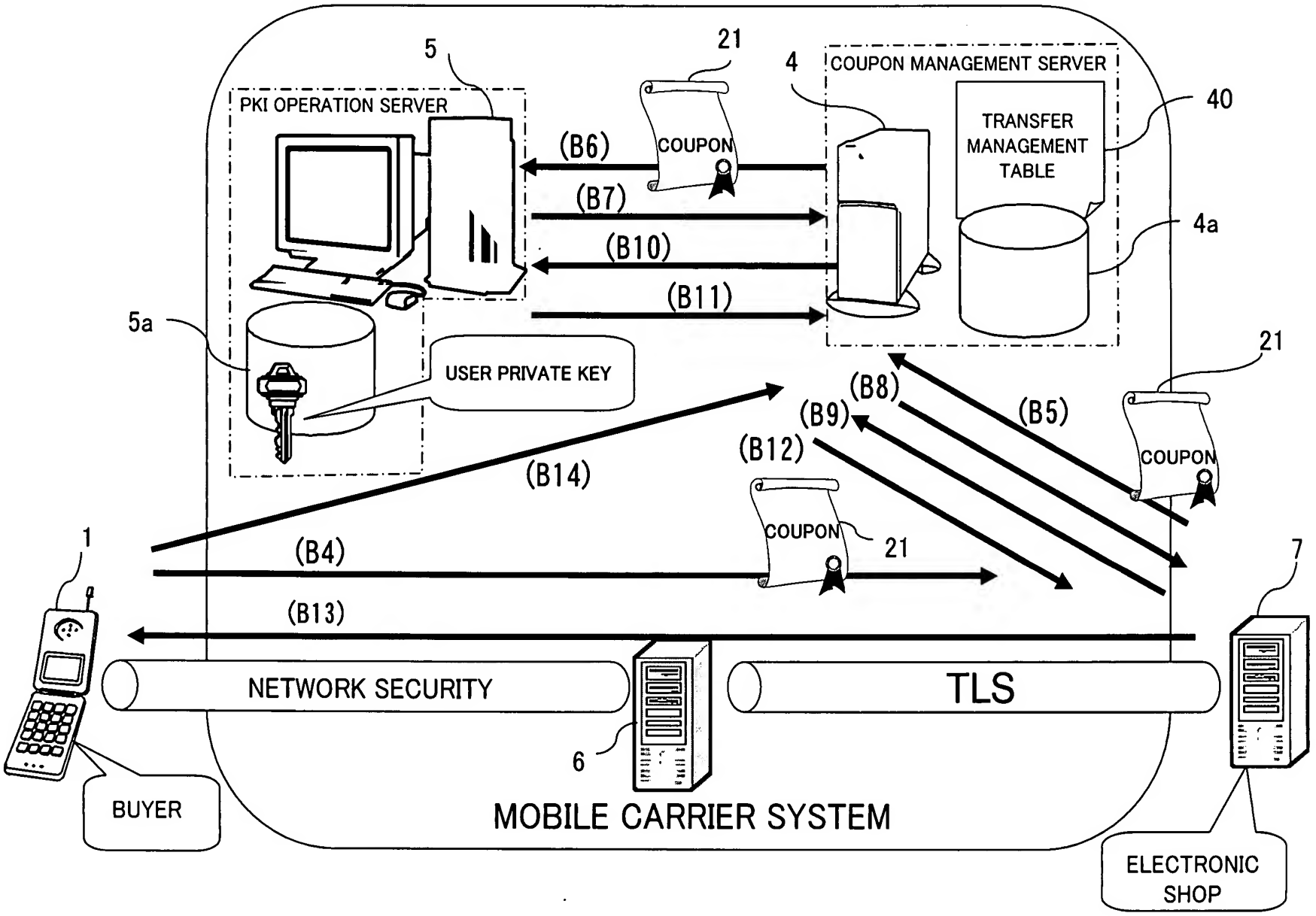
5
21
4
COUPON MANAGEMENT SERVER
PKI OPERATION SERVER
40
TRANSFER MANAGEMENT TABLE
(B6)
COUPON
(B7)
(B10)
(B11)
4a
5a
USER PRIVATE KEY
21
(B8)
(B9)
(B5)
(B12)
(B14)
COUPON
COUPON
21
1
(B4)
7
(B13)
NETWORK SECURITY
TLS
6
BUYER
MOBILE CARRIER SYSTEM
ELECTRONIC SHOP

FIG. 13

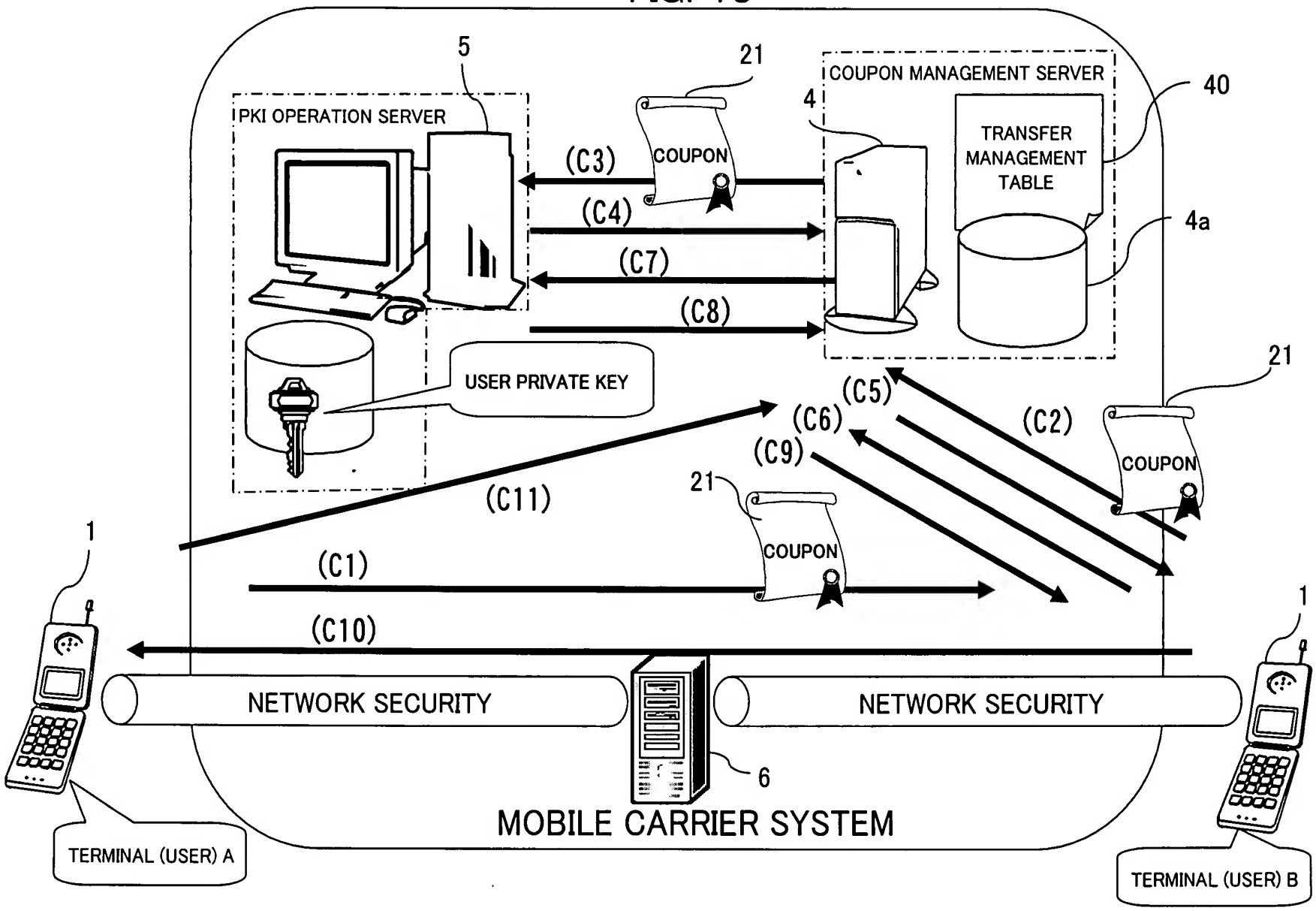
5
21
COUPON MANAGEMENT SERVER
40
PKI OPERATION SERVER
4
TRANSFER MANAGEMENT TABLE
(C3)
COUPON
(C4)
4a
(C7)
(C8)
USER PRIVATE KEY
21
(C5)
(C6)
(C2)
(C9)
COUPON
21
(C11)
COUPON
1
(C1)
(C10)
1
NETWORK SECURITY
NETWORK SECURITY
6
MOBILE CARRIER SYSTEM
TERMINAL (USER) A
TERMINAL (USER) B

FIG. 14

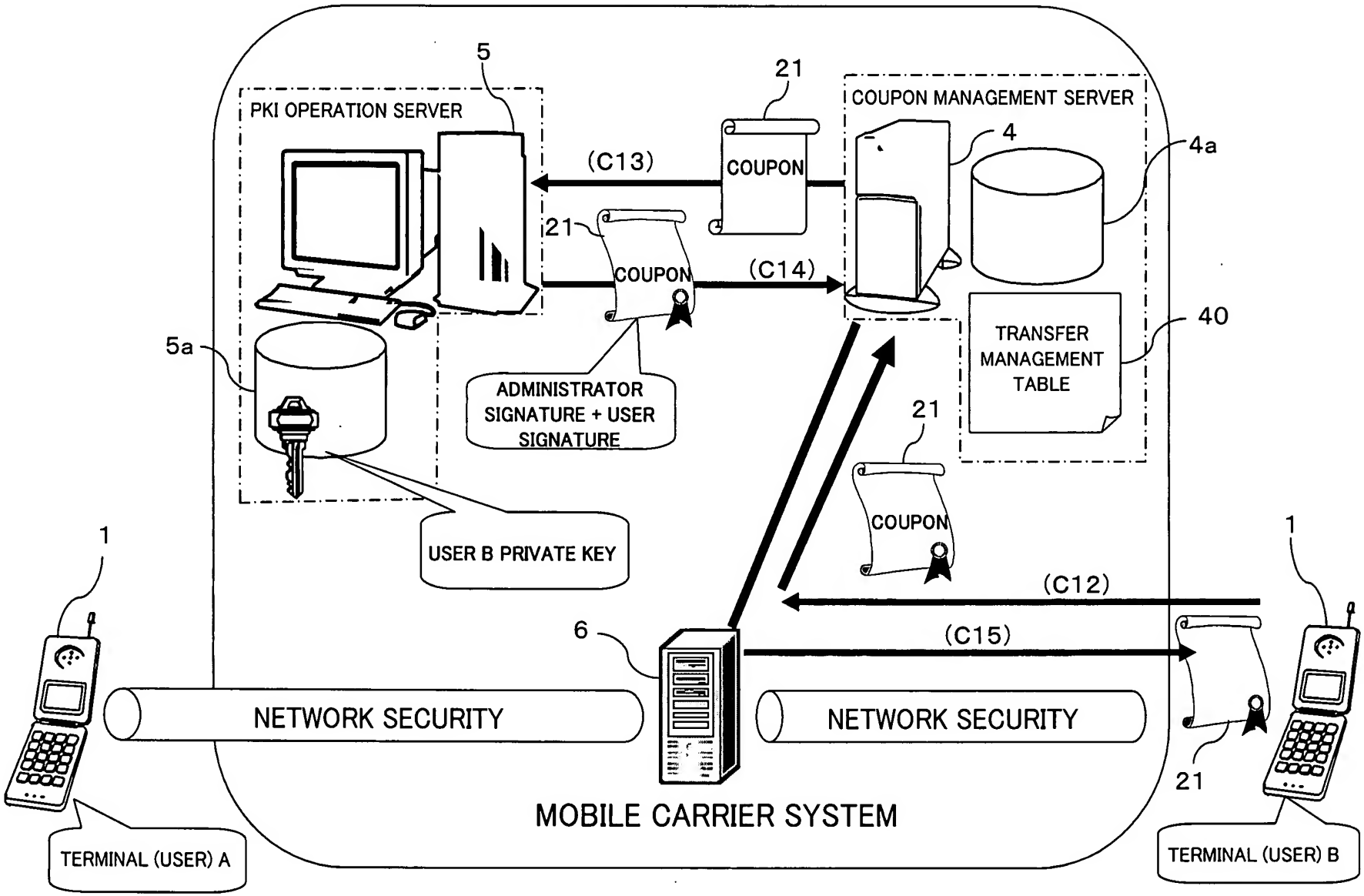
5
PKI OPERATION SERVER
21
COUPON MANAGEMENT SERVER
4
4a
(C13)
COUPON
21
COUPON
(C14)
5a
ADMINISTRATOR SIGNATURE + USER SIGNATURE
TRANSFER MANAGEMENT TABLE
40
21
COUPON
USER B PRIVATE KEY
1
1
(C12)
6
(C15)
NETWORK SECURITY
NETWORK SECURITY
21
MOBILE CARRIER SYSTEM
TERMINAL (USER) A
TERMINAL (USER) B

FIG. 15

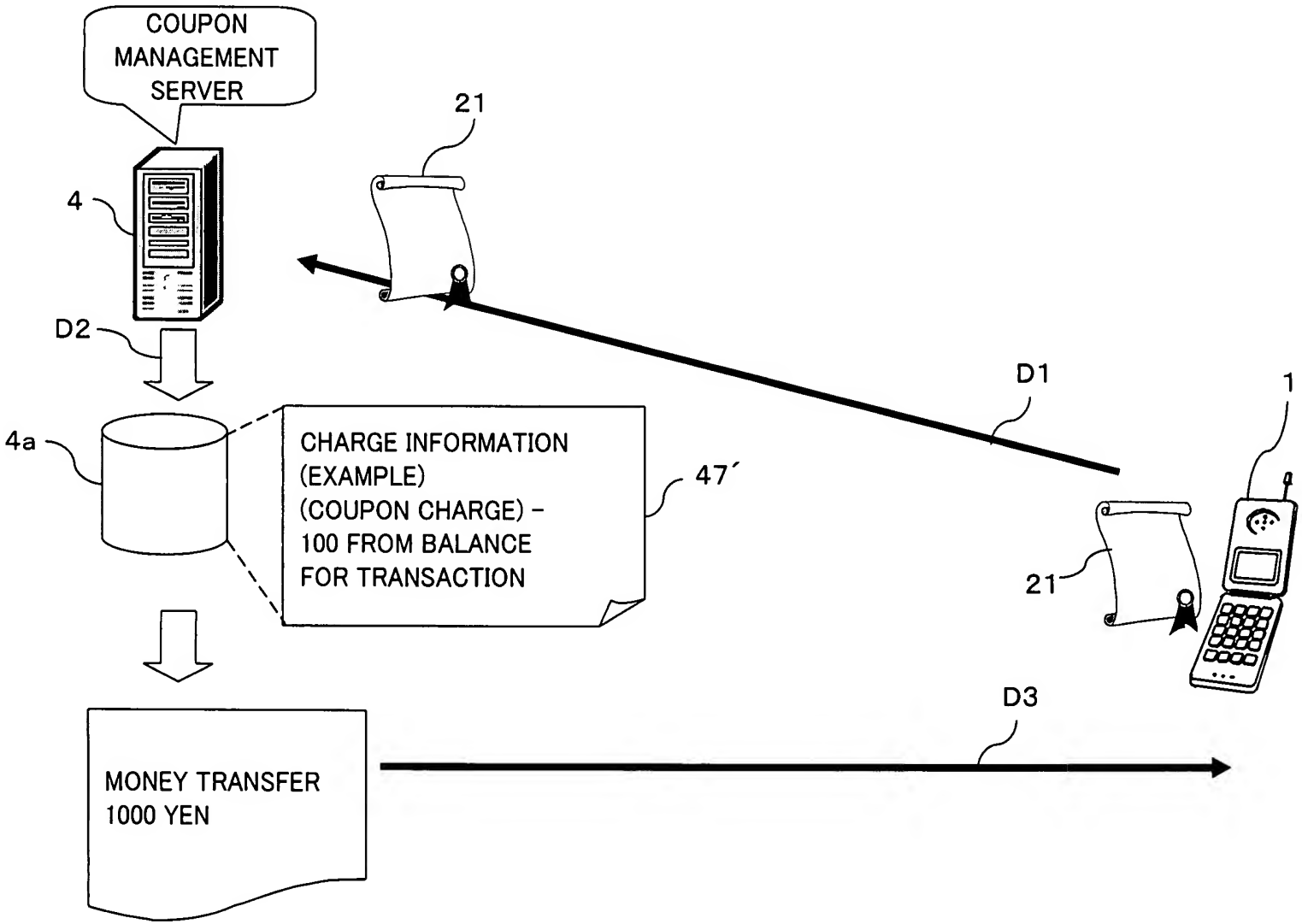
COUPON MANAGEMENT SERVER
4
21
D2
D1
1
4a
CHARGE INFORMATION
(EXAMPLE)
(COUPON CHARGE) -
100 FROM BALANCE
FOR TRANSACTION
47'
21
D3
MONEY TRANSFER
1000 YEN

FIG. 16
PRIOR ART

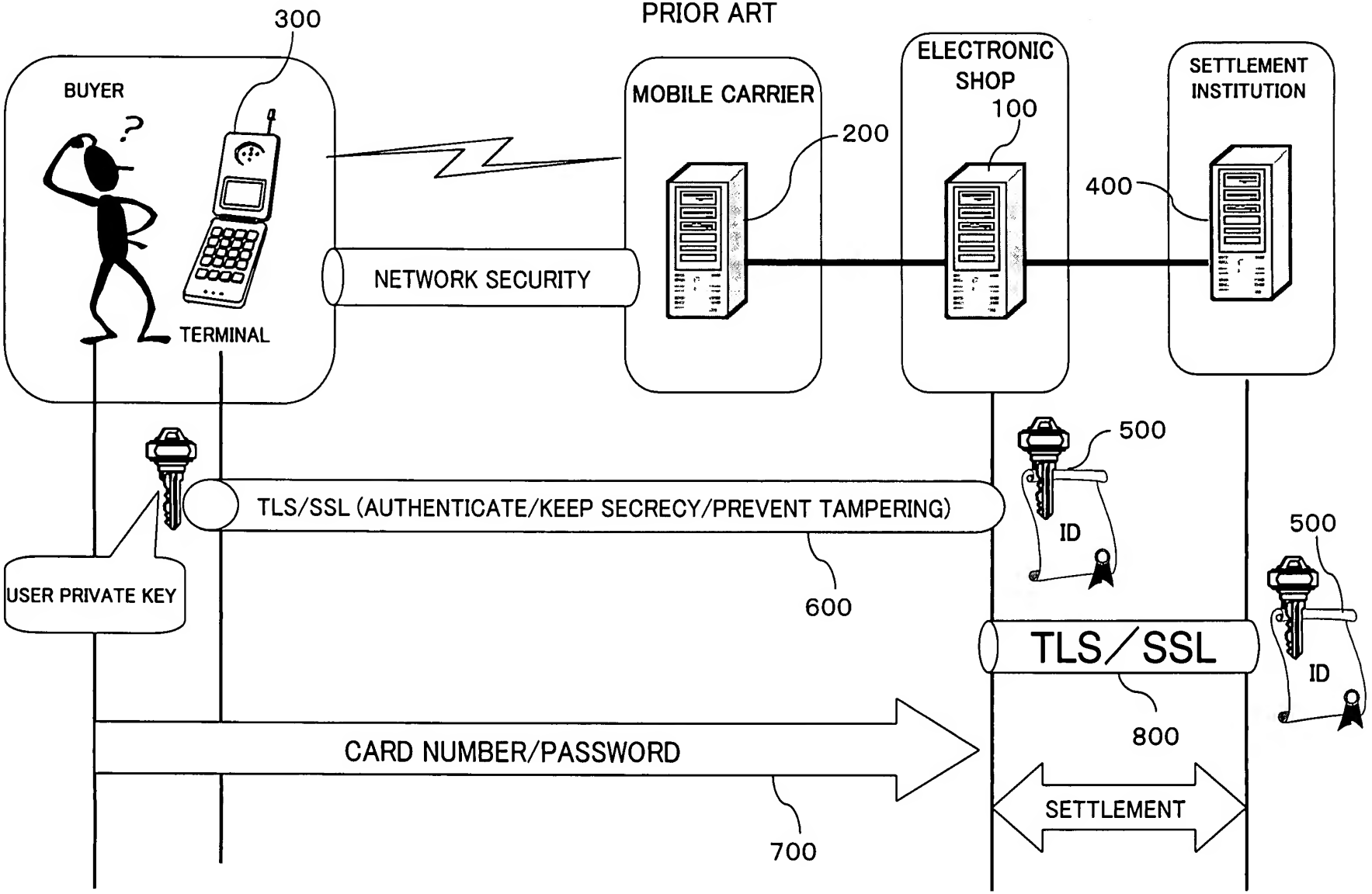
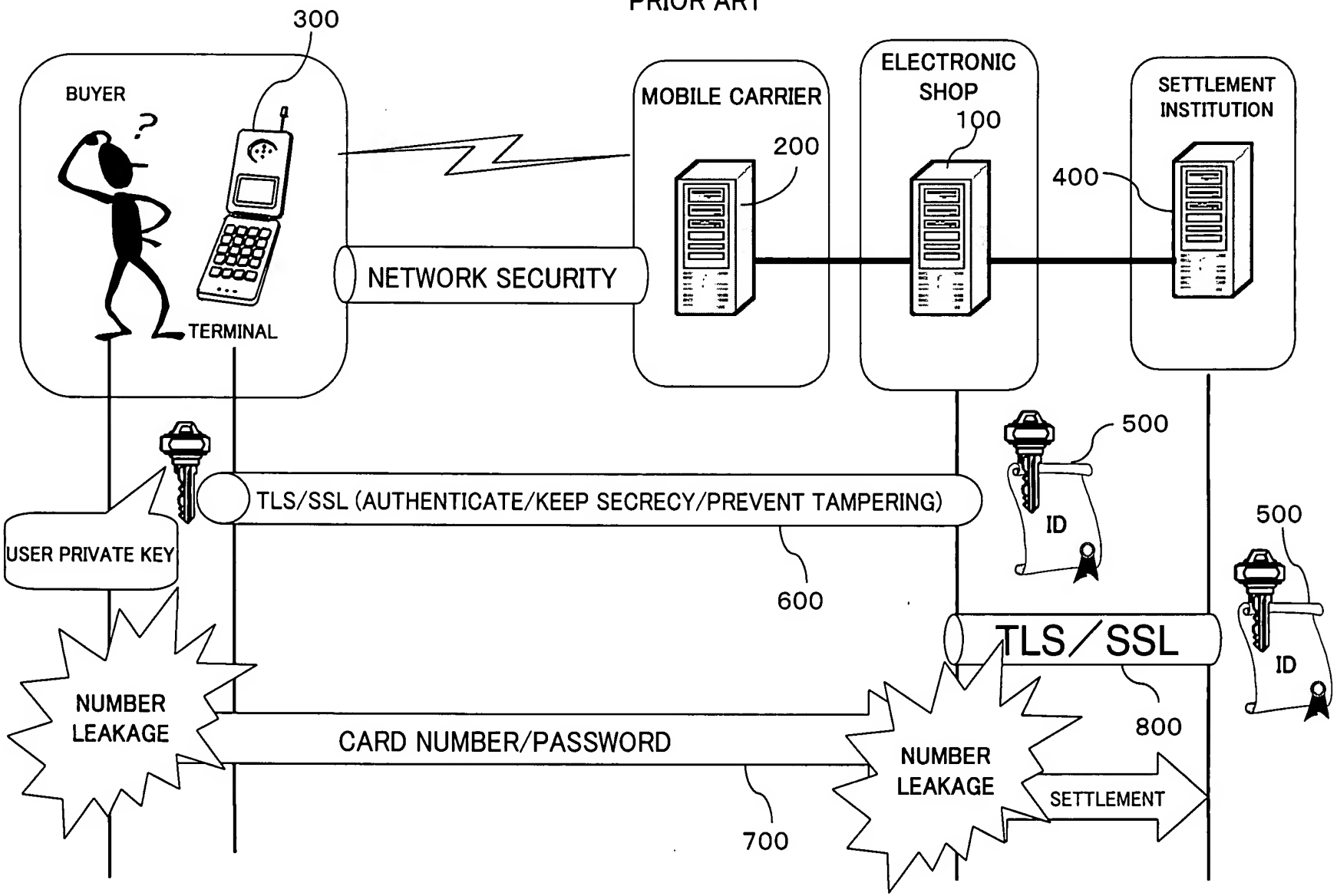
FIG. 17
PRIOR ART